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Microwave Push-on Interconnects

CORNING | Corning Gilbert

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Who We Are

With over 50 years of leading-edge design experience, Corning Gilbert exceeds industry standards with high performance coaxial connectors for broadband telecommunication and microwave systems. Corning Gilbert pioneered the GPO®, GPPO®, G3PO™, G4PO®, SGMS™ and GMS® connectors – setting the industry gold standard for coaxial push-on interconnects. First developed for demanding military applications, these systems are increasingly seen as the high frequency interconnects of choice for military, satellite, wireless and telecommunications applications.

Our goal is to provide design engineers with high performance interconnect solutions that can be easily integrated into today's sophisticated applications.

Our dedicated facility for microwave products enables us to provide exceptional customer and design services with excellent delivery and unparalleled quality. Our manufacturing facility is designed to provide both design flexibility and cost effective components that are controlled to extremely tight tolerances.

Corning Gilbert operates its manufacturing facilities under the ISO 9001 quality system. Headquartered in Glendale, AZ, its state-of-the art facilities adhere to stringent production guidelines to provide our customers with the highest level of reliability, consistency and quality, while meeting applicable military and commercial standards.

Corning Gilbert is a wholly owned subsidiary of Corning Incorporated. Established in 1851, Corning creates leading edge technologies for the fastest growing markets of the world's economy. Corning manufactures optical fiber, cable and photonic products for the telecommunications industry, and high performance display components for computers, television, and their communications related industries. Corning also uses advanced materials to manufacture products for scientific, semiconductor and environmental markets.

Customer Care

Our knowledgeable staff is available Monday - Friday to provide prompt assistance with your order placement and shipment inquiries. Let our customer care team answer your questions or suggest alternative, efficient ways of achieving your interconnect objectives.

phone: 800 651 8869 (U.S. and Canada)
(01) 623 845 5613 (International)
e-mail: pushon-info@corning.com

Custom Designs

Custom designs are supported by a team of innovative engineers, technicians, and machinists at Corning Gilbert. Our highly skilled staff will help you define your requirements and customize a design for the application. We understand that the goal is to quickly design and manufacture these specialized interconnects for electrical, mechanical, and environmental evaluation.

Corning Gilbert offers various custom design solutions including multiposition blocks, hermetic shrouds, cable connectors, PCB mounts, blindmate interconnects (BMI), loads, and adapters. Special packaging is also available, such as custom trays and tape & reel for automated pick and placement. Other custom options include selective plating and solder dipping. A typical design cycle begins with a discussion between the applications engineer and the customer to identify the interconnect requirements. Our library of designs are used as a basis for assessing your needs so that your exact requirements may be met with the highest efficiency. After receipt of order, our design engineer will create 3D CAD models which are optimized for electrical performance using electromagnetic simulation software. This allows tuning for a specific frequency range or broadband performance. Complex designs may require mechanical analysis using finite element analysis (FEA) software.

Complete with high precision Swiss turning centers and CNC mills, our dedicated machine shop is equipped to produce the custom designs you need. We also maintain a plating shop which enables passivation or plating of metallic components. Many validation tests are performed in-house. Electrical tests include voltage standing wave ratio (VSWR), dielectric withstanding voltage (DWV) and insulation resistance. Mechanical tests include durability and mating forces. Environmental tests include thermal cycling, humidity, and salt spray. Contact our customer care team for more information.

How to Reach Us

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Reference Guide

Symbols

CC	Center Conductor	**FD**	Full Detent
LD	Limited Detent	**mm**	Millimeter
MP	Microporous	**PCB**	Printed Circuit Board
R/A	Right Angle	**R/P**	Reference Plane
S/R	Semi-Rigid	**SB**	Smooth Bore
SQ	Square	**Ø**	Diameter
RF	Radio Frequency	**GHz**	Gigahertz
dB	Decibels	**VSWR**	Voltage Standing Wave Ratio
CM	Catchers Mitt		
XD	Extra Deep	**SI**	Short Interface

Standard Tolerances

All dimensions are in inches, interpretation per ANSI Y14.5.

.XX ± .010
.XXX ± .005
Fractions ± 1/64
Angular ± 5º
Typical machine surface finish 63 micro inches

Common Materials and Finishes

- Beryllium copper per ASTM B 196 and/or ASTM B 197. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- CRES 303 per ASTM A 484 and ASTM A 582 or ASTM A 555 and ASTM A 581. Passivate per SAE AMS 2700.
- Brass per ASTM B 16. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- Virgin TEFLON® PTFE fluorocarbon per ASTM D 1710.
- KOVAR® Iron-nickel-cobalt sealing alloy per ASTM F 15. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- Corning® 7070 glass or equivalent.
- Ultem® 1000 (Polyetherimide) per ASTM D 5205.
- Torlon® (Polyamide-Imide) per ASTM D 5204.

Detent

A captivation system was developed for the GPO®, GPPO®, G3PO™ and G4PO® interconnect systems that provides predictable levels of retention without the use of bulky coupling nuts. This feature is characterized as the connector's detent.

The GPO product is designed with three available detent levels, and two detents exist within the smaller GPPO, G3PO and G4PO series. This is accommodated by the incorporation of a ring in the male pin connector (commonly known as the shroud). This 'detent ring' interacts with the mating connector (female contact) to captivate the pair together.

Each of the detent levels, full detent, limited detent (available only in the GPO series), and smooth bore (or zero detent) provide different levels of force required to mate and de-mate the connectors.

	Engage*				**Disengage***				**Cycles***			
	GPO	GPPO	G3PO	G4PO	GPO	GPPO	G3PO	G4PO	GPO	GPPO	G3PO	G4PO
Full Detent	7.0 lbs	4.5 lbs	2.5 lbs	.65 lbs	9.0 lbs	6.5 lbs	4.5 lbs	2.2 lbs	100 min	100 miin	100 min	100 min
Limited Detent	5.0 lbs	N/A	N/A	N/A	7.0 lbs	N/A	N/A	N/A	500 min	N/A	N/A	N/A
Smooth Bore	3.0 lbs	2.5 lbs	1.2 lbs	.20 lbs	0.5 lbs	1.5 lbs	1.0 lbs	.15 lbs	1000 min	500 min	500 min	500 min

* The figures listed for the engage/disengage forces are typical and based upon actual data.

Proper care should be used when designing your system to select the required forces for engaging and disengaging. The level of detent selected will also have an impact on the number of engage/disengage cycles. Note, female cable connectors MUST be used with a full detent male to maintain a fully mated condition during shock and vibration.

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GPO Products

- Center-to-center spacing of 0.170" available for increased package density
- Frequency from DC to 40 GHz
- Designed to accommodate both radial and axial misalignment with negligible VSWR change

GPO® Specifications

General Characteristics

Impedance	50 ohms nominal
Frequency range	DC to 40 GHz
Temperature range	-65°C thru 165°C

Electrical Characteristics

VSWR	1.15:1 to 26.5 GHz typical; <1.5:1 typical to 40 GHz
Insertion loss	.04 √f (GHz)
DWV@ Sea Level	500 Vrms
Insulation resistance	5,000 megohms min.
Contact resistance	
Outer conductor	2 milliohms max.
Inner conductor	6 milliohms max.
RF leakage	-80 dB to 3 GHz, -65 dB to 26.5 GHz

Mechanical Characteristics

Mate/Demate Cycles	FD - 100min.; LD - 500min.; SB - 1000min.;
Force to engage/disengage	FD - 7.0lbs.typ./9.0lbs.typ.; LD - 5.0lbs.typ./7.0lbs.typ.; SB - 3.0bs.typ./0.5lbs.typ.
Tolerated misalignment	
Radial	+/- 0.010
Axial	0.010 (flush to 0.010 from the reference plane)

Environmental Characteristics

Thermal Shock	MIL-STD-202, Method 107, Condition B
Salt Spray	MIL-STD-202, Method 101
Vibration	MIL-STD-202, Method 204
Shock	MIL-STD-202, Method 213, Condition I
Moisture resistance	MIL-STD-202, Method 106, except Step 7B

Materials (typical)

Bodies	Beryllium Copper per ASTM B196 and or/ASTM B197
Outer contacts	Beryllium Copper per ASTM B196 and or/ASTM B197
Center contacts	Beryllium Copper per ASTM B196 and or/ASTM B197
Insulators	PTFE Fluorocarbon per ASTM D1710
Springs	17-7 Stainless Steel per ASTM A313-95A

Finish (typical)

Bodies	Gold plated per MIL-G-45204, Type I, Grade C, Class 1, Over Nickel Plate per SAE AMS-QQ-N-290
Contacts	Gold plated per MIL-G-45204, Type I, Grade C, Class 1, Over Nickel Plate per SAE AMS-QQ-N-290

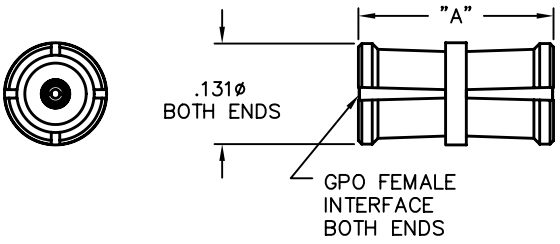
Female Blindmate Interconnect

Catalog Number	A	Catalog Number	A
A1A1-0001-01	.254	A1A1-0001-12	1.30
A1A1-0001-03	.395	A1A1-0001-21	1.00
A1A1-0001-07	.286	A1A1-0001-25	.517
A1A1-0001-08	.243	A1A1-0001-29	.286
A1A1-0001-11	.769		

VSWR (TYP)

1.10:1 to 8 GHz
1.35:1 to 26.5 GHz
1.5:1 to 40 GHz

Note: Bullets of almost any length can be created to suit your application. Please contact customer service for further information.



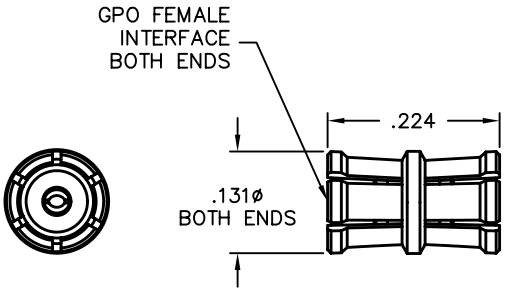
Female Blindmate Interconnect

Catalog Number

A1A1-0001-02

VSWR (TYP)

1.10:1 to 12 GHz
1.40:1 to 26.5 GHz



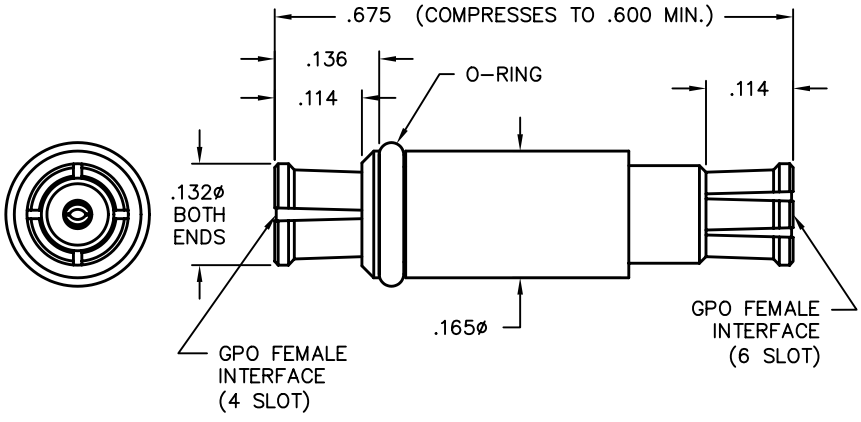
Female Blindmate Interconnect Self-Adjusting

Catalog Number

A1A1-0001-09

VSWR (TYP)

1.20:1 to 8 GHz
1.40:1 to 26.5 GHz



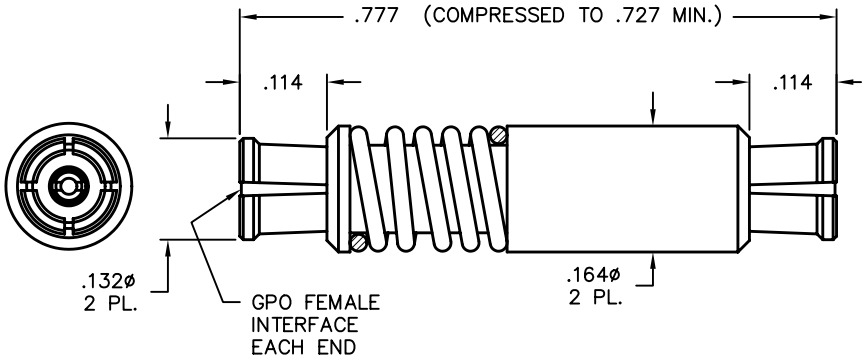
GPO Blindmate Interconnects

Spring Loaded Bullet

Catalog Number

A1A1-0001-34

Compression Length: .727



Female Blindmate Interconnect

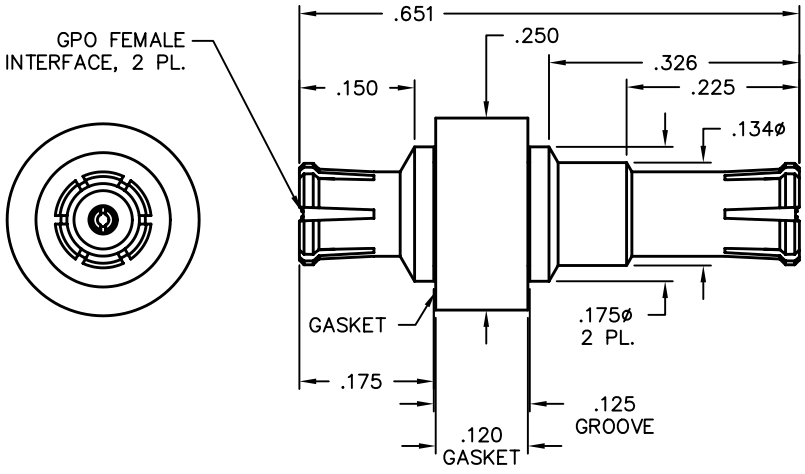
Catalog Number

A1A1-0001-24

VSWR (TYP)

1.25:1 to 18 GHz

1.35:1 to 26.5 GHz



Female Snap-In Float Mount Adapter

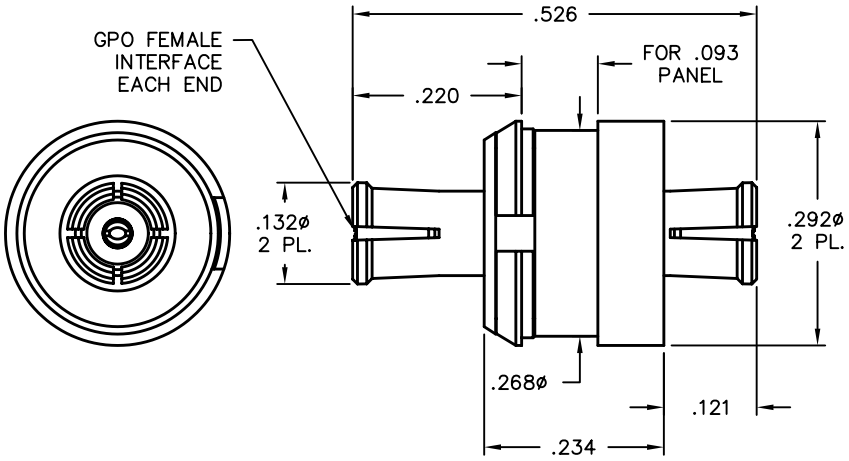
Catalog Number

A1A1-0547-01

VSWR (TYP)

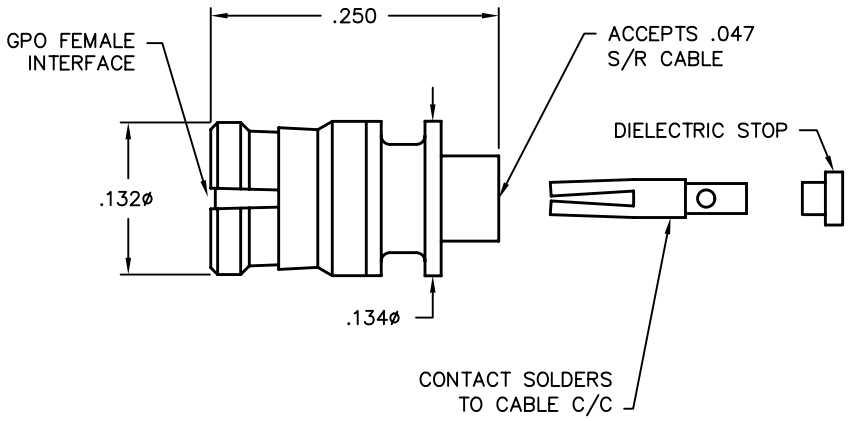
1.35:1 to 26.5 GHz

Compression Length: .466



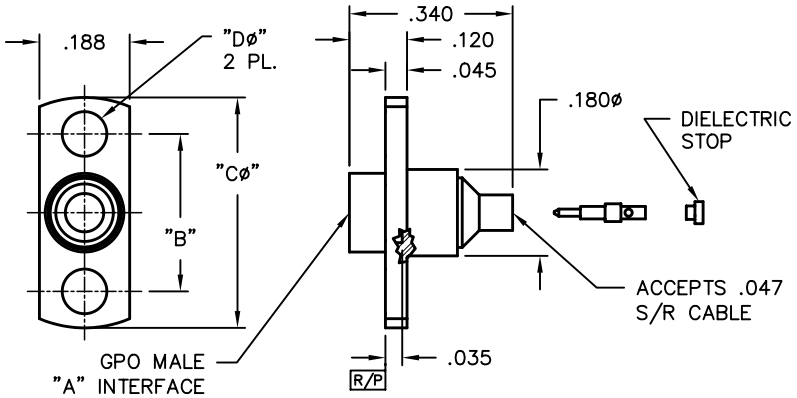
GPO Cable Connectors

Female Straight to 0.047 S/R Cable



Catalog Number	Tools Recommended
A014-B11-01	A096-A99-02
VSWR (TYP)	L096-A99-02
1.25:1 to 26.5 GHz	A096-A99-06
	Assembly Procedure
	AP01-002

Male Flange Mount to 0.047 S/R Cable



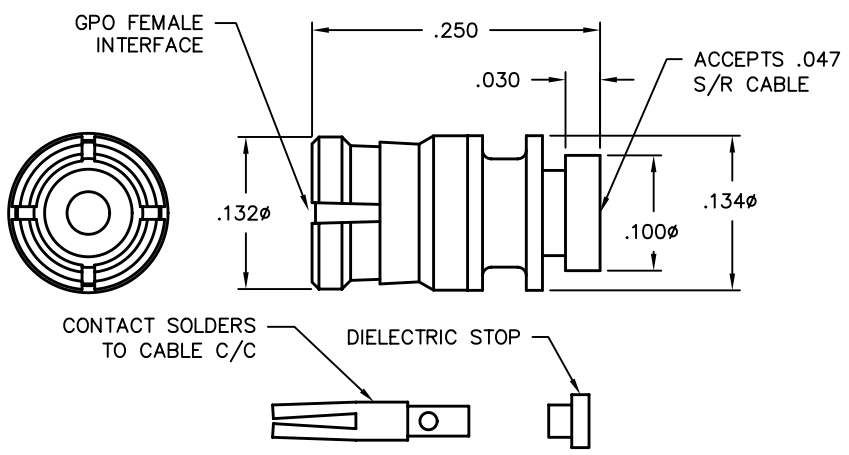
Catalog Number	A	B	Cø	Dø
A001-B83-01	FD	.328	.480	.093
A001-B84-01	LD	.328	.480	.093
A001-B85-01	SB	.328	.480	.093
A001-B83-02	FD	.282	.400	.073
A001-B84-02	LD	.282	.400	.073
A001-B85-02	SB	.282	.400	.073

VSWR (TYP)
1.25:1 to 26.5 GHz

Tools Recommended
A096-A99-04
L096-A99-02
9001-942-3

Assembly Procedure
AP01-014

Female Straight to 0.047 S/R Cable



Catalog Number	Tools Recommended
0119-881-1	A096-A99-02
VSWR (TYP)	L096-A99-02
1.20:1 to 26.5 GHz	A096-A99-06
	Assembly Procedure
	AP01-002

GPO Cable Connectors

Female Straight to 0.086 S/R Cable

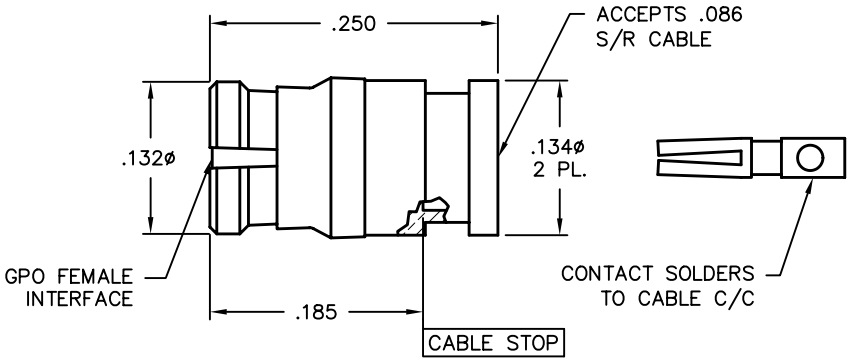
Catalog Number
A014-D11-01*

VSWR (TYP)
1.25:1 to 26.5 GHz

Tools Recommended
A096-A99-06
L096-A99-01

Assembly Procedure
AP01-114

* For a flexible alternative, order A014-K11-06 to allow for heat shrink sleeve



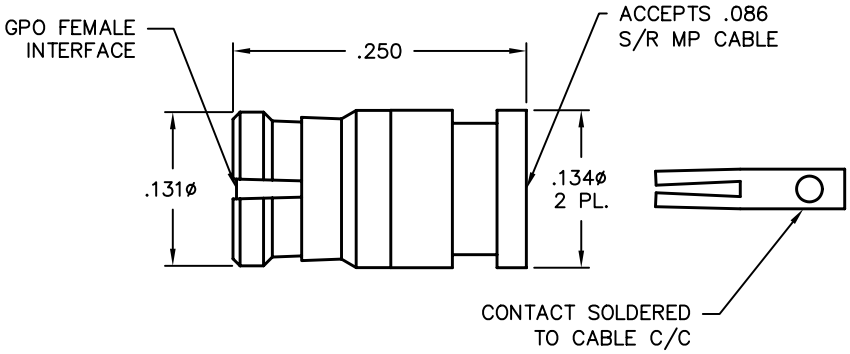
Female Straight to 0.086 S/R Microporous Cable

Catalog Number
A014-D11-02

VSWR (TYP)
1.25:1 to 26.5 GHz

Tools Recommended
9001-932-3
A096-A99-06
L096-A99-01

Assembly Procedure
AP01-071



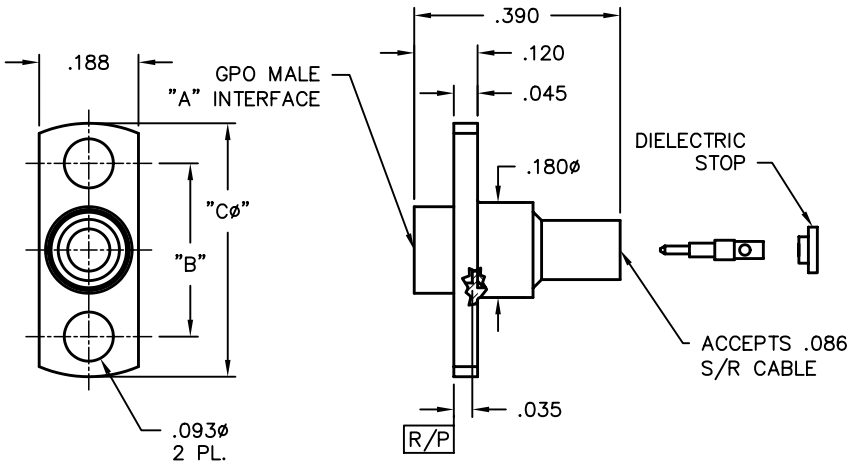
Male Flange Mount to 0.086 S/R Cable

Catalog Number	A	B	Cø	Dø
A001-D83-01	FD	.328	.480	.093
A001-D84-01	LD	.328	.480	.093
A001-D85-01	SB	.328	.480	.093
A001-D83-02	FD	.282	.400	.073
A001-D84-02	LD	.282	.400	.073
A001-D85-02	SB	.282	.400	.073

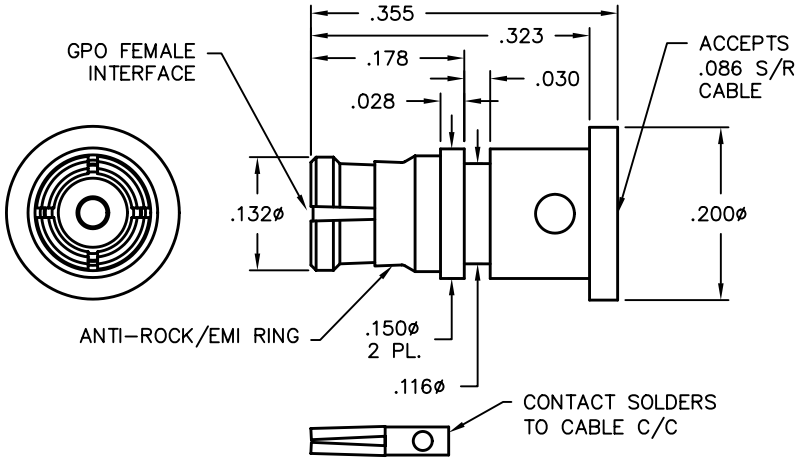
VSWR (TYP)
1.35:1 to 26.5 GHz

Tools Recommended
L096-A99-01
A096-A99-04
9001-942-3

Assembly Procedure
AP01-015

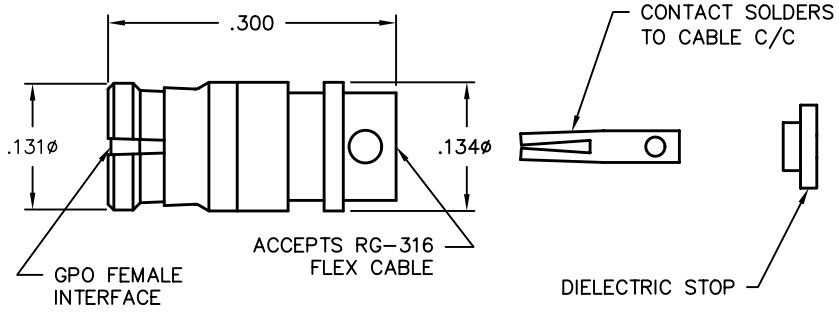


GPO Cable Connectors



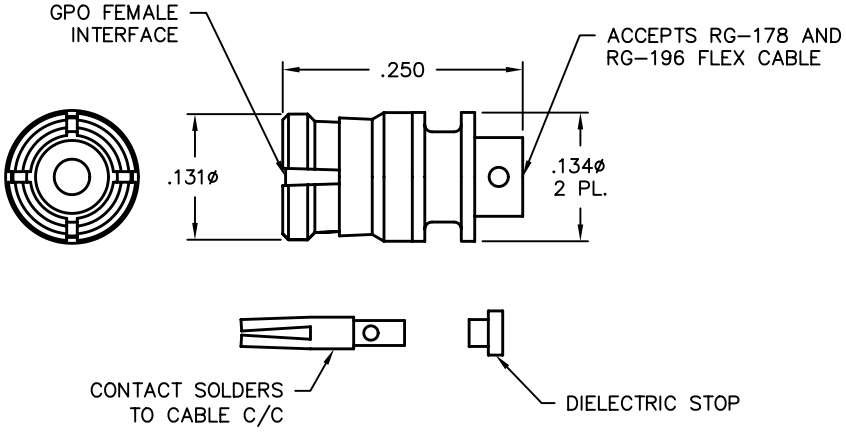
Female Straight to 0.086 S/R Cable Solder Attach Center Conductor

Catalog Number	Tools Recommended
0119-399-1	A096-A99-06
VSWR (TYP)	L096-A99-01
1.25:1 to 26.5 GHz	9001-932-3
	A096-A99-02
	Assembly Procedure
	AP01-131



Female Straight to RG-316 Cable

Catalog Number	Tools Recommended
A014-F71-01	A096-A99-06
VSWR (TYP)	L096-A99-01
1.10:1 to 4 GHz	A096-A99-02
	Assembly Procedure
	IS-7804-1



Female Straight to RG-178/196 Cable

Catalog Number	Tools Recommended
A014-H71-01	A096-A99-02
VSWR (TYP)	L096-A99-01
1.15:1 to 4 GHz	A096-A99-06
	Assembly Procedure
	AP01-039